

R E M A R K S

Claims 1-10, 12-19, and 21-23 are pending. Claims 2 and 13 are amended. Re-examination and reconsideration are requested.

In the office action, dated October 17, 2005, the examiner rejected claims 2 and 13 under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement, as detailed in section 3 of the office action. The examiner also rejected 1-10, 12-19, and 21-23 under 35 U.S.C. §112, first paragraph, as failing to comply with the enablement requirement, as detailed in section 4 of the office action. The examiner also rejected claims 1-10, 12-19, and 21-23 under 35 U.S.C. §112, second paragraph for the reasons specified in section 5 of the office action. The examiner provisionally rejected claim 2 under the judicially-created doctrine of double patenting over claim 3 of co-pending patent application serial no. 10/383,096.

Applicant respectfully traverses the examiner's rejections for the reasons that will be set forth below.

Re the Claims:

Claims 2 and 13 are amended to refer to detecting a plurality of emitted prompt gamma rays.

Argument:

Re the Section 112 Rejections of Claims 2 and 13:

Claims 2 and 13 are amended to refer to detecting a plurality of emitted prompt gamma rays. Applicant believes that these amendments address the issues presented by the examiner in section 3 of the office action.

Re the Section 112, First Paragraph, Rejections of Claims 1-10, 12-19, and 21-23:

In section 4 of the office action, the examiner also rejected the claims as lacking enablement as to the Doppler broadening algorithm and the process for calculating positron lifetime data. As reasons, the examiner cited to section 2 of the current office action and to pages 3 and 4 of the office action of May 10, 2005.

Summary of Argument:

The examiner's rejections are improper in that new references cited by the examiner (i.e., Derlet, Banzuch, Zhu, Shaffer, and Gregory) fail to establish a lack of enablement of the rejected claims. To the contrary, the Derlet, Banzuch, Zhu, Shaffer, and Gregory references indicate that persons having ordinary skill in the art are fully aware of the numerous algorithms that are available, as well as the considerations involved in selecting an algorithm that would be suitable for a given application. Stated another way, while the references cited by the examiner may be regarded as providing an indication that certain issues relating to the selection and implementation of such algorithms may be complex, thus may lead to complex experimentation, the mere fact that the experimentation is complex does not make it undue where, as here, the art typically engages in such experimentation. See, for example, In re Wands, 858 F.2d 731, 8 USPQ2d 1400 (Fed. Cir. 1988).

The examiner has also failed to conduct an analysis of the undue experimentation factors listed in MPEP 2164.01(a). Consequently, the examiner's rejections cannot overcome the presumption of enablement.

Moreover, the best measure of level of disclosure required in this particular field of endeavor can be obtained by reviewing issued U.S. patents in the same field. As will be described in greater detail below, those patents provide a similar level of disclosure to that of the pending application. Because the level of disclosure in the pending application is on a par with the level of disclosure provided by issued U.S. patents in the same field, the level of disclosure provided in the pending application is sufficient under Section 112. Consequently, the examiner's rejections are improper and must be removed.

Finally, appellant notes that in a related application, U.S. patent application serial no. 10/269,807, the Board of Patent Appeals and Interferences reversed identical rejections of the same terms. That is, in the decision issued in appeal no. 2005-0855, issued May 31, 2005, the Board reversed the examiner's Section 112 rejections that the Doppler broadening and positron lifetime algorithms were not sufficiently enabled and definite. While the written description in the present application is not identical to the written description in the related application, the level of disclosure of the algorithms in question is at least as detailed.

The examiner's rejections under Section 112, first paragraph, relate to the sufficiency of disclosure of two algorithms: 1) The Doppler broadening algorithm; and 2) the positron lifetime

algorithm. More specifically, the examiner has asserted (by virtue of his reference to the office action of May 10, 2005) that the written description fails to describe how and in what manner these algorithms should be selected and/or modified as well as how one would evaluate the constants in the algorithms. Applicant will address the issues related to each algorithm separately.

Re the Doppler broadening algorithm:

The examiner's rejection of this algorithm is based on the assertion that the written description fails to describe how and in what manner the Doppler broadening algorithm should be selected and/or modified and how one would evaluate the constants in the algorithm. This rejection is improper in that the examiner has failed to overcome the presumption that the written description is sufficiently enabling as to this algorithm. That is, the examiner has not conducted an analysis of the undue experimentation factors listed in MPEP 2164.01(a).

The Doppler broadening algorithm is described in paragraphs [0047] - [0049] and spans pages 18-19 of the written description. In addition, the written description states that, in one embodiment, the Doppler broadening algorithm may be that disclosed in U.S. Patent No. 6,178,218 to Akers, which is specifically incorporated by reference into the written description.

In section 2 of the office action, the examiner argues that the newly cited references (i.e., Derlet, Banzuch, Zhu, Shaffer, and Gregory) support his rejections. Applicant respectfully disagrees. To the contrary, rather than supporting the examiner's enablement rejections, the references support a conclusion that the description of the algorithms is fully enabled. That is, the references confirm the statements in the written description of the present application that Doppler broadening algorithms are known in the art. The references also confirm that persons having ordinary skill in the art appreciate the issues in selecting a particular Doppler broadening algorithm from among the many. For example, the Banzuch reference includes a description of the various types of Doppler broadening algorithms as well as the how such algorithms may be adapted for use in specific applications.

Stated another way, the Banzuch reference confirms that the level of ordinary skill in the art is high, as is the level of knowledge regarding Doppler broadening algorithms and their suitability for various applications. While the Banzuch reference provides an indication that certain issues relating to the selection and use of a Doppler broadening algorithm may be

complex, thus may lead to complex experimentation, the mere fact that the experimentation is complex does not make it undue if the art typically engages in such experimentation. In re Wands, supra. The new references clearly demonstrate that the art is sophisticated and typically does engage in such complex experimentation.

Because, as evidenced by the new references, persons having ordinary skill in the art are well-aware of the various issues and complexities in selecting a particular Doppler broadening algorithm from among many algorithms, it cannot be said the failure to provide a description as to how and in what manner the Doppler broadening algorithm should be selected and/or modified and how one would evaluate the constants in the algorithm fails to meet the enablement requirement. Stated simply, such knowledge is within the level of ordinary skill in the art. Again, the fact that any experimentation may be complex does not make it undue where, as here, the art typically engages in such experimentation.

Moreover, and specific to the Doppler broadening algorithm, the written description of the present application specifically states that in one embodiment the Doppler broadening algorithm may comprise the one disclosed in U.S. Patent No. 6,178,218 to Akers. Therefore, the examiner's continued assertion that the written description fails to identify a specific Doppler broadening algorithm is erroneous.

Any doubt as to the conclusion that patent description need not include details relating to the how to select or evaluate any constants required by the Doppler broadening algorithm is erased by examining the level of disclosure provided in prior issued patents in the same field of endeavor. In the case of the Doppler broadening algorithm, U.S. Patent No. 6,178,218 to Akers describes how a Doppler broadening algorithm or technique may be used to analyze annihilation gamma rays. That issued patent provides no more detail as to how and in what manner one would evaluate the constants in the algorithm than does the pending application. Consequently, the level of disclosure provided in the pending application is sufficient under Section 112.

The examiner is of the opinion (by virtue of his incorporation of the rationale stated in the May 10, 2005, office action) that because the Akers patent does not use the term "algorithm," that somehow the disclosure in the present application is non-enabling. The examiner's rationale is contrary to Federal Circuit law on this issue. As noted by the applicant in a previous response, the Court of Appeals for the Federal Circuit has found that "every step-by-step process, be it electronic, chemical, or mechanical, involves an 'algorithm' in the broad sense of the term."

State Street Bank & Trust Co. v. Signature Financial Group, Inc., 149 F.3d 1368, 1374-1375, 47 USPQ2d 1596, 1602 (Fed. Cir. 1998).

The “technique” described in detail in the Akers patent for Doppler broadening is also an algorithm, which fits the usage thereof in the pending claims. Accordingly, the prior description by itself and in view of the knowledge of persons having ordinary skill in the art is sufficiently enabling to support the present claims. Contrary to the position of the examiner, there is no need for any further guidance in how to select any particular technique, nor how to transform any such technique into an algorithm, nor how to evaluate any constants in any resulting mathematical formula. The present disclosure, as supplemented by the Akers patent provides all the guidance necessary.

Still more evidence of the sufficiency of disclosure of the Doppler broadening algorithm is found by reviewing the Board opinion reversing the examiner’s rejections of the identical algorithm in a related patent application, serial no. 10/269,807. In reversing the rejections, the Board found that the level of disclosure provided in the related application was sufficient under Section 112, first and second paragraphs. Because the written description of the present application contains the same level of disclosure, and is identical in many respects, it is unreasonable to conclude that the description of the Doppler broadening algorithm fails to meet the enablement requirement.

Re the positron lifetime algorithm:

The examiner's rejections as to the positron lifetime algorithm are also based on the assertion that the written description fails to describe how and in what manner this algorithm should be selected and/or modified and how one would evaluate the constants in the algorithm. This rejection is also improper in that the examiner has failed to conduct an analysis of the undue experimentation factors listed in MPEP 2164.01(a). Consequently, the examiner's rejections fail to overcome the presumption that the written description is sufficiently enabling.

The positron lifetime algorithm is described in paragraphs [0043]-[0046] and spans pages 15-17. The specification describes the purpose of the positron lifetime algorithm, what it involves (e.g., the determination of an elapsed time between positron formation and positron annihilation).

In section 2 of the office action, the examiner argues that various ones of the newly cited references (i.e., Derlet, Banzuch, Zhu, Shaffer, and Gregory) support his rejections. Applicant respectfully disagrees.

As discussed above with respect to the Doppler broadening algorithm, rather than supporting the examiner's rejections, the references support a conclusion that the description of the positron lifetime algorithm is fully enabled. That is, the references confirm that the level of ordinary skill in this art is high, and that persons having such ordinary skill would be able to select a suitable positron lifetime algorithm from among the many and also would be able to select and/or evaluate any constants that may be required for the selected algorithm. While the references cited by the examiner indicate that certain issues relating to the selection and implementation of a positron lifetime algorithm may be complex, thus may lead to complex experimentation, the mere fact that the experimentation is complex does not make it undue where, as here, the art typically engages in such experimentation. See, for example, In re Wands, supra.

Because, as evidenced by the new references, persons having ordinary skill in the art are well-aware of the various issues and complexities in selecting a positron lifetime algorithm from among many algorithms, it cannot be said the failure to provide a description as to how and in what manner the positron lifetime algorithm should be selected and/or modified and how one would evaluate the constants in the algorithm fails to meet the enablement requirement. Indeed,

and as evidenced by the newly cited references (i.e., Derlet, Banzuch, Zhu, Shaffer, and Gregory) such knowledge is within the level of ordinary skill in the art.

In addition, any doubt as to the conclusion that patent description need not include the level of detail desired by the examiner is erased by examining the level of disclosure provided in prior issued patents in the same field of endeavor. In the case of the positron lifetime algorithm, U.S. Patent No. 6,178,218 to Akers describes how the measurement of positron lifetime can be used to indicate the presence of defects in metals. In addition, U.S. Patent No. 4,064,438 to Alex *et al.* describes how a positron lifetime measurements may be used to detect hydrogen embrittlement. Significantly, neither issued patent provides any more detail than does the pending application as to how and in what manner a positron lifetime technique or algorithm should be selected and/or modified and how one would evaluate the constants in the algorithm. Consequently, the level of disclosure provided in the pending application is sufficient under Section 112.

Finally, and as was the case for the Doppler broadening algorithm, still more evidence of the sufficiency of disclosure of the positron lifetime algorithm is found by reviewing the Board opinion reversing the examiner's rejections of the positron lifetime algorithm in a related application, serial no. 10/269,807 (Appeal No. 2005-0855). In reversing the rejections, the Board found that the level of disclosure provided in the related application was sufficient under Section 112, first and second paragraphs. Because the written description of the present application contains the same level of disclosure, and is identical in many respects, it is unreasonable to conclude that the description of the positron lifetime algorithm fails to meet the enablement requirement.

Re the Section 112, Second Paragraph, Rejections of Claims 1-10, 12-19, and 21-23:

The examiner rejected claims 1-10, 12-19, and 21-23 under 35 U.S.C. §112, second paragraph, for the reasons set forth in section 5 of the office action. These rejections are improper in that in that the examiner has also failed to overcome the presumption that the claims are sufficiently definite under Section 112 when filed.

In responding to these rejections, applicant hereby repeats the arguments set forth above in response to the Section 112, first paragraph, rejections. That is, the various algorithms are not only enabled when considered in light of the level of ordinary skill in the art, but are also not

vague nor indefinite for the same reason, i.e., the person having ordinary skill in the art would understand the algorithms and possess the knowledge required to evaluate the many algorithms available and select those that would be appropriate for the desired application.

In addition, with regard to the Doppler broadening algorithm, the written description clearly states that several different types of Doppler broadening techniques have been developed and could be used. The written description also states that the Doppler broadening algorithm may comprise the algorithm disclosed in U.S. Patent No. 6,178,218.

The positron lifetime algorithm is described in the written description, which specifically states that systems for detecting positron lifetimes, as well as the algorithms utilized thereby, are well-known in the art and could be easily provided by persons having ordinary skill in the art after having become familiar with the teachings of the present invention.

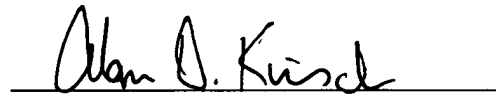
Clearly, the terms “Doppler broadening algorithm” and “positron lifetime algorithm” are specifically referred to in the specification, thus provide sufficient support for their use in the claims. In addition, techniques for performing both of these processes are well-known to persons having ordinary skill in the art, and could be easily provided by persons having ordinary skill in the art after having become familiar with the teachings of the present invention. Therefore, the references in the specification and claims to “Doppler broadening algorithm” and “positron lifetime algorithm” meet the requirements set forth in Miles Laboratories, Inc., v. Shandon, Inc., 27 USPQ2d 1123 (Fed. Cir. 1993). That is, these terms have sufficient meaning to persons having ordinary skill in the art to allow them to understand the bounds of the claims when read in light of the specification.

Re the Provisional Double Patenting Rejection:

The examiner provisionally rejected claim 2 under the judicially-created doctrine of double patenting over claim 3 of co-pending application serial no. 10/383,096. Appellant does not traverse this provisional rejection and agrees to file a terminal disclaimer in the appropriate application at the appropriate time (i.e., upon the indication of allowance of either claim 2 in this application or claim 3 of the co-pending application).

Applicant believes that all of the claims pending in this patent application are allowable and that all other issues raised by the examiner have been rectified. Therefore, applicant respectfully requests the examiner to reconsider his rejections and to grant an early allowance. If any questions or issues remain to be resolved, the examiner is requested to contact the applicant's attorney at the telephone number listed below.

Respectfully submitted,

A handwritten signature in black ink, reading "Alan D. Kirsch", is written over a horizontal line.

Alan D. Kirsch, Esq.
Attorney for Applicant
PTO Registration No. 33,720
P.O. Box 1625
Idaho Falls, ID 83415-3899
(208) 526-1371

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